

AMENDMENTS TO THE CLAIMS:

Please amend claims 1-14 and add new claims 15-17 as follows.

The following claims will replace all prior versions of claims in the present application.

LISTING OF CLAIMS:

1. (Currently amended) An automatic zero point correction device ~~for a pressure sensor, comprising: characterize by being so constituted that, with~~

a pressure sensor operable to measure fluid pressure, wherein the output voltage from the pressure sensor is outputted to an the outside and, the ~~afore-mentioned~~ sensor output voltage is inputted to a the time-varying zero point drift correction means of the pressure sensor;

a sensor output judgment means of the time-varying zero point drift correction means, wherein the sensor output judgment means operates to make a judgment is-made to determine whether if the ~~afore-mentioned~~ sensor output voltage is larger than a the set value ~~with the said sensor output judgment means of the time-varying zero point drift correction means;~~ and further the

operating condition judgment means of the time-varying zero point drift correction means, wherein the operating condition judgment means judges operating conditions of the pressure sensor-are-judged with the afore-mentioned operating condition judgment means of the time-varying zero point drift correction means, wherein the time-varying zero point drift correction means operates to cancel time-varying zero point drift of the pressure sensor is cancelled when the sensor output judgment means determines it is found that the afore-mentioned sensor output voltage is larger than the set value and the operating condition judgment means determines that the operating conditions of the pressure sensor are within

~~previously set~~ under the operating conditions ~~previously set~~.

2. (Currently amended) An automatic zero point correction device ~~for a pressure sensor as claimed in Claim 1, wherein the pressure sensor is~~ wherein it is so constituted that a semiconductor pressure sensitive element ~~is employed for a pressure sensor,~~ the output voltage from the pressure sensor is outputted to the outside through ~~an~~ the amplifier and is inputted to the time-varying zero point drift correction means of the pressure sensor through an A/D converter, and ~~further the output for the zero point correction, which is identical to the~~ afore-mentioned sensor output voltage and with reversed polarity, is inputted to ~~an~~ the offset terminal of the ~~afore-mentioned amplifier from the afore-mentioned time-varying zero point drift correction means through a~~ the D/A converter when the sensor output voltage is larger than the set value and the pressure sensor is operating under the set operating conditions, wherein the output for zero correction is identical to the sensor output voltage with reversed polarity.

3. (Currently amended) An automatic zero point correction device, comprising:
~~for a pressure control device characterized by being so constituted that, with the~~
a pressure control device equipped with a control valve for pressure control and a pressure sensor operable to measure fluid pressure, ~~wherein~~ the output voltage from the pressure sensor is outputted to ~~an~~ the outside and, the ~~afore-mentioned sensor output voltage~~ is inputted to ~~a~~ the time-varying zero point drift correction means of the pressure sensor;
a sensor output judgment means of the time-varying zero point drift correction means,
wherein the sensor output judgment means operates to make a judgment is made to determine
whether ~~if the afore-mentioned sensor output voltage is larger than a~~ the set value; ~~with the~~
~~said sensor output judgment means of the time-varying zero point drift correction means; and~~

further the

operating condition judgment means of the time-varying zero point drift correction means, wherein the operating condition judgment means judges operating conditions of the pressure sensor are judged with the afore-mentioned operating condition judgment means of the time-varying zero point correction means, wherein the time-varying zero point drift correction means operates to cancel time-varying zero point drift of the pressure sensor is cancelled when the sensor output judgment means determines it is found that the afore-mentioned sensor output voltage is larger than the set value and the operating condition judgment means determines that the operating conditions of the pressure sensor are within previously set under the operating conditions previously set.

4. (Currently amended) An automatic zero point correction device for a pressure control device as claimed in Claim 3, wherein the pressure sensor is it is so constituted that a semiconductor pressure sensitive element is employed for a pressure sensor, the output voltage from the pressure sensor is outputted to the outside through an the amplifier and is inputted to the time-varying zero point drift correction means of the pressure sensor through an A/D converter, and further the output for the zero point correction, which is identical to the afore-mentioned sensor output voltage and with reversed polarity, is inputted to an the offset terminal of the afore-mentioned amplifier from the afore-mentioned time-varying zero point drift correction means through a the D/A converter when the sensor output voltage is larger than the set value and the pressure sensor is operating under the set operating conditions, wherein the output for zero point correction is identical to the sensor output voltage with reversed polarity.

5. (Currently amended) An automatic zero point correction device, comprising:

~~for the pressure type flow rate control device characterized by being so constituted that, with~~
the

a pressure type flow rate control device comprising an orifice for the flow rate control, a control valve mounted on the upstream side pipe from the orifice, and an upstream side pressure sensor installed between the orifice and the control valve to detect upstream side pressure P1 to control the flow rate of fluid passing through the orifice by the upstream side pressure P1, ~~wherein the afore-mentioned~~ output voltage from the pressure sensor is outputted to ~~a~~ the flow rate computing means;

a time-varying zero point drift correction means of the pressure sensor, wherein the
~~afore-mentioned sensor output voltage is inputted to the time-varying zero point drift~~
~~correction means of the pressure sensor;~~

a sensor output judgment means of the time-varying zero point drift correction means,
wherein the sensor output judgment means operates to make a judgment is made to determine
whetherif the afore-mentioned sensor output voltage is larger than a the set value;~~with the~~
~~said sensor output judgment means of the time-varying zero point drift correction means; and~~
further the

operating condition judgment means of the time-varying zero point drift correction
means, wherein the operating condition judgment means judges operating conditions of the
~~pressure sensor are judged with the afore-mentioned operating condition judgment means of~~
~~the time-varying zero point correction means, wherein the time-varying zero point drift~~
correction means operates to cancel time-varying zero point drift of the pressure sensor, ~~is~~
~~cancelled when the sensor output judgment means determines it is found that the afore-~~
~~mentioned sensor output voltage is larger than the set value and the~~ operating condition
judgment means determines that operating conditions of the pressure sensor are within
previously set~~under the operating conditions previously set.~~

6. (Currently amended) An automatic zero point correction device ~~for a pressure type flow rate control device~~ as claimed in Claim 5, wherein the pressure sensor is it is so constituted that a semiconductor pressure sensitive element is employed for a pressure sensor, the output voltage from the pressure sensor is outputted to the outside through anthe amplifier and inputted to the time-varying zero point drift correction means of the pressure sensor through an A/D converter, and ~~further the output for the zero point correction, which is identical to the afore-mentioned sensor output voltage and with reversed polarity,~~ is inputted to anthe offset terminal of the ~~afore-mentioned~~ amplifier from the ~~afore-mentioned~~ time-varying zero point drift correction means through athe D/A converter when the sensor output voltage is larger than the set value and the pressure sensor is operating under the set operating conditions, wherein the output for zero correction is identical to the sensor output voltage with reversed polarity.

7. (Currently amended) An automatic zero point correction device, comprising: ~~for a pressure type flow rate control device characterized by being so constituted that,~~ with the

a pressure type flow rate control device comprising an orifice for ~~the~~ flow rate control, a control valve mounted on the upstream side pipe from the orifice, an upstream side pressure sensor installed between the orifice and the control valve to detect upstream side pressure P1, and a downstream side pressure sensor mounted on the downstream side pipe to detect downstream side pressure P2 to control the flow rate of fluid passing through the orifice by both upstream side pressure P1 and downstream side pressure P2, wherein the output voltage from the pressure sensor is outputted to athe flow rate computing means;

a time-varying zero point drift correction means of the pressure sensor, wherein the

~~afore-mentioned-sensor output voltage is inputted to the time-varying zero point drift correction means; of the pressure sensor~~

a sensor output judgment means of the time-varying zero point drift correction means,
wherein the sensor output judgment means operates to make; a judgment is made to
determine whetherif the afore-mentioned-sensor output voltage is larger than a the set value;
with the said-sensor-output-judgment-means-of-the-time-varying-zero-point-drift-correction
means; and further the

operating condition judgment means of the time-varying zero point drift correction
means, wherein the operating condition judgment means judges operating conditions of the
pressure sensor are judged with the afore-mentioned-operating-condition-judgment-means,
wherein the time-varying zero point drift correction means operates to cancel time-varying
zero point drift of the pressure sensor is cancelled when the sensor output judgment means
determinesit is found that the afore-mentioned-sensor output voltage is larger than the set
value and the operating condition judgment means determines that operating conditions of the
pressure sensor are within previously setunder the operating conditions previously set.

8. (Currently amended) An automatic zero point correction device ~~for a pressure~~
~~type-flow-rate-control device as claimed in Claim 7,~~ wherein the pressure sensor is it is so
~~constituted that a semiconductor pressure sensitive element is employed for a pressure sensor,~~
the output voltage from the pressure sensor is outputted to the outside through anthe amplifier
and is inputted to the time-varying zero point drift correction means of the pressure sensor
through an A/D converter, and ~~further the output for the zero point correction, which is~~
~~identical to the afore-mentioned-sensor output voltage and with reversed polarity,~~ is inputted
to anthe offset terminal of the ~~afore-mentioned-amplifier from the afore-mentioned-time-~~
varying zero point drift correction means through athe D/A converter when the sensor output

voltage is larger than the set value and the pressure sensor is operating under the set operating conditions, wherein the output for zero correction is identical to the sensor output voltage with reversed polarity.

9. (Currently amended) An automatic zero point correction device ~~for a pressure control device as claimed in Claim 3, or Claim 4~~ wherein the set value used as a reference at the sensor output judgment means of the time-varying zero point drift correction means is employed as of the pressure sensor becomes the sensor output voltage equivalent to less than control accuracy of the full scale pressure to be detected by the pressure sensor.

10. (Currently amended) An automatic zero point correction device ~~for a pressure control device as claimed in Claim 3, or Claim 4~~ wherein it is so made that the set operating conditions used as a reference at the operating condition judgment means of the time-varying zero point drift correction means comprise ~~of the pressure sensor are made up of three conditions including, that is,~~

- i. whether or not a signal for forced opening to the control valve exists;
- ii. whether or not a signal for forced closing to the control valve exists; and
- iii. the set signal for the flow rate is zero.

11. (Currently amended) An automatic zero point correction means ~~for the pressure type flow rate control device as claimed in Claim 5, Claim 6, Claim 8 or Claim 9~~ wherein it is so made that the set value used as a reference at the sensor output judgment means of the time-varying zero point drift correction means is employed as of the pressure sensor becomes the sensor output voltage equivalent to less than control accuracy of the full scale pressure to be detected by the pressure sensor.

12. (Currently amended) An automatic zero point correction ~~means for the pressure type flow rate control device as claimed in Claim 5, Claim 6, Claim 8 or Claim 9~~ wherein ~~it is so made that the~~ set operating conditions used as a reference at the operating condition judgment means of the pressure sensor ~~comprise are made up of three conditions including, that is,~~

- i. whether or not a signal to forced opening to the control valve exists;
- ii. whether or not a signal to forced closing to the control valve exists; and
- iii. the set value of the flow rate is zero.

13. (Currently amended) An automatic zero point correction ~~means for a pressure control device as claimed in Claim 4,~~ wherein ~~it is so made that a~~ D/A converter, through which voltage for the zero point correction is outputted to the offset terminal of the amplifier from the time-varying zero point correction means, is shared with athe temperature drift correction means of the pressure sensor mounted on athe flow rate computing means of the ~~said pressure type flow rate control device.~~

14. (Currently amended) An automatic zero point correction ~~means for the pressure type flow rate control device as claimed in Claim 6, or Claim 8~~ wherein ~~it is so constituted that a~~ D/A converter, through which voltage for the zero point correction is outputted to the offset terminal of the amplifier from the time-varying zero point drift correction means, is shared with athe temperature drift correction means of the pressure sensor mounted on athe flow rate computing means of the ~~said pressure type flow rate control device.~~

15. (NEW) An automatic zero point correction device as claimed in Claim 4, wherein the set value used as a reference at the sensor output judgment means of the time-varying zero point drift correction means is employed as the sensor output voltage equivalent to less than control accuracy of the full scale pressure to be detected by the pressure sensor.

16. (NEW) An automatic zero point correction device as claimed in Claim 4, wherein the set operating conditions used as a reference at the operating condition judgment means of the time-varying zero point drift correction means comprise three conditions including

- i. whether or not a signal for forced opening to the control valve exists;
- ii. whether or not a signal for forced closing to the control valve exists; and
- iii. the set signal for the flow rate is zero.

17. (NEW) An automatic zero point correction device as claimed in Claim 8, or wherein the D/A converter, through which voltage for the zero point correction is outputted to the offset terminal of the amplifier from the time-varying zero point drift correction means, is shared with a temperature drift correction means of the pressure sensor mounted on a flow rate computing means of the pressure type flow rate control device.